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tion of the number of persons exhibiting anosmia in this community, than to some form of inheritance.

I wish in no way to be understood as opposing the belief that deficiencies in the sense of smell may be inherited in human beings. On the contrary, it seems certain that defects in the sense of smell must be inherited, since this sense in man is so degenerate as to be vestigial in function, often strangely one-sided in its manifestations, or even completely wanting. The extent to which the sense is developed varies greatly among individuals. Many persons with apparently normal olfaction are actually unable to appreciate certain particularly pungent odors such as those of violets, or hydrocyanic acid, etc.

In deciding the cause of deficient olfaction it is most important to recognize the favorable location for exposure to disease of the olfactory epithelium. Any attempt to determine the manner of inheritance of the different degrees of anosmia, therefore, must necessitate a careful examination of the nasal epithelium in all so-called abnormal individuals in order to detect the vitiating effects of disease.

In heredity studies of no other sense would such considerations be more important than in investigations based on the degree of efficiency of the sense of smell. Diseases of the nasal epithelium are often but slightly contagious thus affecting only certain members of a family, and on account of greater exposure, more probably the male members, as in the family now considered. Some diseases of the nasal passages as rhinoscleroma are endemic in certain regions and might cause secondary conditions which would seem to be "inbred" in the community.

Anosmia is known among women as well as among men, though probably more often in the latter. Until, however, there is statistical evidence indicating a decided preponderance of the defect in one sex, when not the direct result of disease, there is no reason in the absence of further genetic data for assuming the condition to be sex-linked in inheritance.

Anosmia is in no way comparable to color-blindness as the expression "smell-blindness" might suggest. It is comparable only to defective sight or actual blindness when this is due to either retinal, nerve, fiber-tract, or cerebral center deficiency.

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QUOTATIONS

THE ORGANIZATION OF RESEARCH IN GREAT BRITAIN¹

THE Committee of the Privy Council for Scientific and Industrial Research has published its third annual report (for the year August 1, 1917, to July 31, 1918).² Practically it is a new government department which administers the Imperial Trust for the Encouragement of Scientific and Industrial Research. During the last financial year the committee expended £30,825, and it is convinced that the value to the nation of the work done is beyond all comparison greater than the cost, and will, as time goes on, bring continually augmented returns, for the garnering of the harvest of research is sure though slow. The estimated expenditure for the current financial year is £163,350, which includes a sum of £89,750 for the National Physical Laboratory. In addition, the laboratory is rendering services to the several war departments, which will be met out of the vote of credit, at an estimated cost of £74,100. The grants in aid of industrial research associations will be met out of the fund of one million held by the Imperial Trust.

The report by the Advisory Council, of which Sir William McCormick is chairman, and Sir Frank Heath, K.C.B., secretary, gives an account of the progress made in the establishment of these associations and the steps that have been taken in the organization of national research. Some thirty industries are

¹ *British Medical Journal*.

² "Report of the Committee of the Privy Council for Scientific and Industrial Research for the Year 1917-18." H.M. Stationery Office. Price 4d. net. (Cd. 9194.)

actively engaged in establishing such associations, and licences have already been issued by the board of trade to three. Among them is the British Scientific Instrument Research Association, founded through the efforts of the optical industry; the department has guaranteed a total expenditure by this association, in accordance with an approved scheme, of not more than £40,000 during the first five years. In accordance with the terms of the agreement with the Royal Society, the department became responsible for the maintenance of the National Physical Laboratory on April 1, and has given special attention to the salaries of the scientific and technical staff. Hitherto the laboratory to balance its expenses, has been obliged to rely in the main upon fees paid to it for testing; as a result its officers have been seriously underpaid, and the best of its senior men are continuously being attracted away from it. It is now recommended that the scales of salaries should be completely overhauled, and that adequate provision should be made for superannuation.

One of the subdepartments through which the Department of Industrial and Scientific Research works is the Food Investigation Board, of which Mr. W. B. Hardy, secretary of the Royal Society, is director. This board has several subcommittees—on fish, on meat, on fruit and vegetables, on oils and fats, and on engineering. It has been giving particular attention to the preservation of food, especially by cold storage. It is acting in close consultation with the Food (War) Committee of the Royal Society, and the work has grown rapidly. On this head the report contains the following significant observation: "Events have justified the rapid decisions which we took in the summer of last year, while experience has shown that the appointment of a responsible director to organize a group of researches of national importance assisted by an advisory board of distinguished men of science and affairs greatly facilitates prompt action and the proper coordination of all the work in accordance with a definite scheme. Research work, like other forms of creative activity, will not flourish under committee rule."

Last year, at the invitation of the Home Office, the department appointed a committee, of which Dr. J. S. Haldane is a member, to inquire into the types of breathing apparatus used in coal mines. This committee has just presented its first annual report,³ in which it draws attention to certain serious defects in existing mine rescue apparatus, and in the training of men to use them. The defects, it is stated, are mainly matters of detail, and suggestions are made for their improvement, for the fixing of standards of achievement, and for preparing the ground for further progress in experimental investigations. Experimental work is being carried on for the committee at the Heriot Watt College, Edinburgh, under the direction of one of its members, Dr. Henry Briggs, who has established a physical testing station which will be run by a military staff attached to the Scottish command. For the War Office the committee has examined and reported on several sets of captured enemy breathing apparatus, and has advised that special inquiries should be made into the storage and supply of liquid and compressed oxygen, and other gases. In conjunction with the Admiralty and the War Office a research clearing house committee has been appointed to coordinate the investigations into gas problems conducted by the different departments, and to ensure rapid interchange of knowledge and experience, questions of particular difficulty being referred to the science department.

The department has also established, jointly with the Medical Research Committee, an industrial fatigue research board with Professor Sherrington as chairman. With the board is associated a panel of representative men and women from each of the industries being studied, who will join the board as each trade in turn comes under review. It will investigate "the relations of the hours of labor and of other conditions of employment, including methods of work, to the production of in-

³ Department of Scientific Industrial Research. First Report of the Mine Rescue Apparatus Research Committee. H.M. Stationery Office. Price 1s. 9d. net.

dustrial fatigue, having regard both to industrial efficiency and to the preservation of health among the workers." Grants are made to aid researches undertaken by independent bodies and also to individual students in research work; in making them the council has been guided by its knowledge of the quality of the research work undertaken by the professor or head of the department who recommends the student.

In referring on a previous occasion to the work of this new department we expressed the hope that though it was primarily established to encourage the application of scientific research to industrial methods, it might become the rallying point of other scientific branches subsidized by the government, eventually developing into an independent Ministry of Science. These hopes have been realized to a considerable extent, and we find no evidence that the department is regarded as a temporary expedient. Indeed, another step forward has been taken which we hardly dared to anticipate. The annual report of the department contains a series of paragraphs relating to the development of the organization of research in the Overseas Dominions. The home department has been in close touch with the Canadian Honorary Advisory Council for Scientific and Industrial Research, which was incorporated by a Canadian Act of Parliament a year ago. This Canadian council has promoted many valuable researches and inquiries, some of which have already produced important results. Again, in Australia, an Advisory Council of Science and Industry has been established, and has started a number of investigations which have aroused the active interest of manufacturers and others likely to benefit by the systematic application of science to industry. The New Zealand government took initial steps to organize scientific and industrial research as long ago as 1916, but the matter does not there seem to have passed beyond the stage of discussion. In South Africa there is an Industries Advisory Board, which deals not only with scientific and industrial research, but also with statistics of production, factory legislation, the encourage-

ment of industries, and the development of natural resources. Finally, it is the intention of the government of India to establish after the war an Industrial Board and Department, which will succeed the Indian Munitions Board and extend its sphere of operations. As the chairman of that board has pointed out, munitions for a modern army cover practically all the wants of the civil community. It is also to be noted that a National Research Council was established in the United States of America in 1916, under the auspices of the National Academy of Sciences, and largely through the initiative of its president, Dr. Welch, and of Professor Hale. This council, as we have shown on previous occasions, did much valuable preparatory work before America entered the war, and since then it has so grown in usefulness and power that President Wilson has issued an executive order putting it upon a permanent basis.

The letter in which the Lord President, Lord Curzon of Kedleston, presents the report of the British Advisory Council to the King in Council, concludes as follows: "The foundations of a national system of scientific research are being truly laid. In the final structure as they (the Advisory Council) are planning it, the universities and technical colleges, the learned societies and the industries will be found taking their due place; not in subordination to the state, as our enemies like to see them, but working together for the common good in helpful cooperation."

SPECIAL ARTICLES

THE RELATION OF THE SECTOR OPENING OF THE SECTOR PHOTOMETER TO THE EXTINCTION COEFFICIENT

IN determining absorptions with a spectrograph and sector photometer it is necessary to know the relation existing between the sector opening and the extinction coefficient. If the two beams whose intensities are to be equalized by interposed sectors be denoted by I and I' respectively, then

$$\log \frac{I}{I'} = e$$

defines e as the extinction coefficient of the